

A FAILED BREEDING ATTEMPT BY BANDED STILT IN THE EASTERN GOLDFIELDS AREA OF WESTERN AUSTRALIA

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SUMMARY

This paper is based on data gathered on a breeding attempt by Banded Stilt (*Cladorhynchus leucocephalus*) during two visits to Lake Goongarrie (by K.H. Coate on 2 April 1999 and R.E. Johnstone and P. Stone on 20 April 1999). Less than 25 nesting events of these birds have been recorded, the majority being from the semi arid areas of the eastern goldfields in Western Australia. The most recent report of Banded Stilt breeding in Western Australia was in 1995 (after 'Cyclone Bobby') when about 10,000 birds nested on Lake Ballard and 20,000 on Lake Barlee (Minton *et al.* 1995). Previous breeding reports in the Menzies area have come from Lakes Barlee (Burbidge and Fuller 1982), Ballard (Kolichis 1976), Marmion (Kolichis 1976) and possibly Goongarrie (Johnstone and Storr 1998). The incidence of runt eggs is discussed and possible reasons for the abandonment of the eggs.

LOCATION

Lake Goongarrie is a large

ephemeral salt lake (about 81 square kilometres) situated about 80kms north of Kalgoorlie in Western Australia. The breeding colony was located on a low island (800m x 500m) at 29°55'07"S 121°12'04"E.

BACKGROUND

On 1 April 1999, K.H. Coate and his wife on their way to join a Western Australian Naturalists' Club's Easter excursion at Goongarrie Station, camped overnight on the western shore of Lake Goongarrie, which had a shallow covering of water. A strong east wind was blowing across the lake bringing distant sounds from a large concentration of Banded Stilt. Although no birds could be seen from the shoreline, it was decided to investigate their breeding status at first light the following morning. Expecting the birds to be in fairly close proximity, Coate departed the campsite with the understanding that he would return shortly afterwards.

After walking in an easterly direction for about 2 hours,

through water of an average depth of 150–200 mm, (115mm on R.E. Johnstone's visit) he came upon an estimated 2,000–3,000 Banded Stilt. They were feeding over an area of about 500 square metres near the centre of the lake. Many pairs were copulating, which indicated a breeding colony was situated somewhere on the lake. On further investigation, a low island with a large breeding colony was discovered several kilometres to the south of this concentration of birds. He estimated there were about 3,000 birds there, although from photographs taken at the time, it would appear this was an under estimation. Along the gradually sloping shoreline and down to the water, were thousands of recently abandoned fresh eggs from a failed breeding attempt. Eggs were pushed together in piles or lying in water at the edge of the island, while others were covered or partially covered in sand. This indicated that weather conditions consistent with severe wind and wave action whipping up over the shallow lake body, was the cause of abandonment. Birds had regrouped and were vigorously re-nesting in low samphire shrubbery, higher up, directly behind the original site.

As the breeding of this species is a rare event in Western Australia, R.E. Johnstone and P. Stone visited the colony eighteen days later (20 April 1999) only to find it abandoned. A single flock of 1,000 birds was observed feeding near the centre of the lake.

Shortly after these visits

Conservation and Land Management carried out an aerial survey and reported about 1,000 birds on Lake Goongarrie and about 1,000 birds on Lake Marmion north east of Lake Goongarrie. They found no breeding colonies on any of the Menzies lake systems, most of which had little water in them (pers. comm.).

WEATHER

Weather conditions contributing to the filling of Lake Goongarrie were received from the Bureau of Meteorology. Information was that it is not uncommon for a line of severe thunderstorms to bring heavy rain and strong wind to the Lake Goongarrie area, missing either Menzies and/or Kalgoorlie. Satellite imagery received from the 'Geo Stationery Meteorological Satellite GMS5', showed severe thunderstorms centred over Lake Goongarrie on the afternoons of 13, 14 and 15 March 1999. It would appear that during this time enough water was deposited in the normally dry lake to attract the Banded Stilts. The ability of Stilts to rapidly find suitable water in arid areas, following storms or after rain fronts have gone through, hundreds of kilometres away, is well recognised, but still a mystery.

There were two cyclones in the area in March 1999. 'Cyclone Elaine' between 17–20 March is not thought to be a factor, as it was more a rain bearing depression that went well to the south and west of Lake Goongarrie. The most likely cause



1. Buried and abandoned Banded Stilt eggs after severe wind and wave action decimated the breeding colony on an island in Lake Goongarrie. Photo: 2 April 1999, Kevin Coate.



2. Away from the abandoned eggs the Banded Stilts had regrouped and were vigorously re-nesting in low samphire shrubbery. Photo: 2 April 1999, Kevin Coate.



3. A clutch of freshly laid Banded Stilt eggs showing typical scrawls and blotches at Lake Goongarrie. Photo: 2 April 1999, Kevin Coate.



4. Banded Stilts nesting amongst samphire shrubbery away from the shoreline at Lake Goongarrie. Photo: 2 April 1999, Kevin Coate.



5. Bottom row four typical eggs of Banded Stilt and top rows a series of runt eggs collected on Lake Goongarrie on 20 April, 1999. Photo R.E. Johnstone.

for the decimation and abandonment of the first breeding colony, appears to have been severe weather conditions associated with 'Cyclone Vance' between 18–23 March. The gold mining town of Menzies, about 40kms NNW of Lake Goongarrie, recorded 83.4mm of rain between 22–24 March. Menzies does not have a weather station to record wind, however, wind gusts of up to 34 knots were recorded at Kalgoorlie on 23 March 1999.

Before Johnstone *et al.* visited the area, there were isolated thunderstorms on 11 April at Ora Banda about 37km to the southwest, and Menzies (where 18mm of rain was recorded). On 12 April, Menzies had another storm, from which a lesser amount of rain fell.

NEST DATA

Johnstone and Stone found most eggs from the first breeding attempt were rotten on the beach area. Protected nests above the strand zone contained eggs ranging from fresh to 0.3 incubation. Nests with eggs from the more recent breeding attempt ranged from fresh to 0.2 or 0.3 incubation. Most nests were small scrapes 13–16cm wide, 3–4cm deep and placed 20–25cm apart (sometimes up to 1 m in outer areas). Some nests were large deep scrapes 20cm wide and 4cm deep, built up and lined with fine pieces of quartz and pieces of samphire. The entire main nesting area (including first and second attempts) measured 70m long and 14m wide. Nests were counted in

three 5m plots in different parts of the colony, and contained 350 nests, 320 nests and 330–350 (partly in strand zone). Overall this gave an estimate of 14,500 nests.

Egg weights ranged from 34.5 to 48g (mean 18 eggs 40.75g). Egg size, 132 eggs from 32 clutches ranged from 48.0–60.4 x 36.7–41.5 mm. A series of eggs including some runt eggs were collected from the colony. The smallest runt measured 19.9 x 14.7 mm.

About 500m to the east of the main site (not there on Coate's visit) was another small abandoned colony above the beach in open samphire. It was in an area 35m long by 7m wide and contained 30 fresh scrapes, 67 nests with 1 egg, 43 nests with 2 eggs and 22 nests with 3 eggs. A number of eggs were checked – all fresh. Twenty metres further east was a third abandoned colony (not there on Coate's visit) that contained 10 fresh scrapes and 6 nests with one egg.

DISCUSSION

Despite the appearance of very favourable breeding conditions with egg laying and incubation under way, all three colonies were abandoned at the same time.

On Coate's visit there was no sign of predation, but Johnstone found crows had recently predated 2 clutches of eggs. There was an abundance of food. On both visits the lake contained large numbers of brine shrimp (*Artemia salina*).

Although infrequently filled, the

ephemeral lakes system out from Menzies are ideal for Banded Stilt when conditions are favourable. However, flooding is unpredictable and water can dry up quickly under the harsh conditions that prevail.

There has been a number of instances of previous breeding colonies being abandoned in the area. The first record was in 1929 when T. Smith of Kalgoorlie found thousands of young Rottneest Snipe (Banded Stilt) dead in a strip of country about 30 miles wide some distance from Menzies (Jenkins 1975). Police sergeant A. Middleton of Menzies reported chicks walking through the town in 1963 (Jenkins 1975). In September 1980 A.A. Burbidge and P.J. Fuller found a recently abandoned colony on islands in Lake Barlee (Burbidge and Fuller 1982). They estimated there to be about 179,000 nests in the area, with about 255,000 addled eggs and dead chicks scattered around the colony.

In September 1986, K.H. Coate *et al.* came upon hundreds of recently killed immature Banded Stilt along the road north of Menzies. These birds, not yet able to fly had walked south from Lake Ballard when the water dried up. In one measured stretch of 5km, 234 dead birds were counted, almost all having been killed by motor vehicles. A few small clusters of 2 or 3 birds were seen alive near small pools of water in roadside drains. On arrival at Menzies it was learned that an estimated several thousand birds had walked through the town 3 days earlier. It seemed possible that

some instinct was directing them south from Lake Ballard (25km north of Menzies). When driving past Lake Goongarrie (40km to the south of Menzies), there appeared to be some water in the lake.

There are also some historical reports of Banded Stilt abandoning breeding sites just prior to egg laying: e.g. in early January 1967, P. Stone (pers. comm.) found 3,000 birds on Lake Kondinin, which had been filled by rain in July 1966. About 90–100 pairs of Banded Stilt completed nest scrapes on sandy spits and islands, but by the end of January (when "Cyclone Elsie" passed well to the north of this area, but dropped rain inland) only 300 birds remained on the lake and no eggs were laid despite the water levels remaining very high. P. Stone also recorded small colonies abandoned on Lake Grace in 1960 and 1965 (pers. comm.).

Although the reason for the abandonment of eggs by the Banded Stilt in April 1999 is unclear, there are several possibilities. (1) Storms in the area during 11–12 April. (2) They may have sensed the shallow coverage of water in Lake Goongarrie would not last; hence moved to a more favourable site away from the Menzies lake systems.

During March 1999 cyclones 'Elaine' and 'Vance' dumped huge amounts of water in lake systems to the south and west of the Menzies lake systems, completely filling many of them. For example, on 31 March Coate visited another large ephemeral lake – Lake Deborah East, about

180km SSW from Lake Goongarrie, and found it to be brimming full with water.

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